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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/569,546	03/17/2006	Airy-Pierre Lamaze	06017	7732
23338 7590 09/18/2008 DENNISON, SCHULTZ & MACDONALD 1727 KING STREET SUITE 105 ALEXANDRIA, VA 22314				
EXAMINER BELL, BRUCE F				
ART UNIT		PAPER NUMBER		
1795				
MAIL DATE		DELIVERY MODE		
09/18/2008		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/569,546

**Applicant(s)**

LAMAZE, AIRY-PIERRE

**Examiner**

Bruce F. Bell

**Art Unit**

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 38-74 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 38-57,63,64,67,68,70,71,73 and 74 is/are rejected.
- 7) ☒ Claim(s) 58-62,65,66,69 and 72 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 February 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_.

**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 38-57, 63, 64, 67, 68, 70, 71, 73 and 74 are rejected under 35 U.S.C. 103(a) as being unpatentable over D'Astolfo, Jr. et al (6558526) in combination with Secrist et al (4495049).

D'Astolfo, Jr. et al disclose an inert anode assembly 12 having an array of inert anodes 14 that are electrically and mechanically fastened by a connector 16 to an insulating lid 18. The insulating lid 18 is connected to an electrically conductive support member 20. See col. 2, lines 32-41. The inert anode shape or size is that of a substantially cylindrical cup shaped inert anode and the inert anode can be made of a metal, ceramic, cermet, etc., which possesses satisfactory corrosion resistance and stability during the aluminum production process. See col. 2, lines 42-49. The connectors 16 may be made of a material that provides sufficient electrical conductivity and mechanical support for the inert anodes 14. Each connector 16 may be made of Inconel. A highly conductive metal core of copper is provided inside of the Inconel sleeve. The connectors 16 are attached to the inert anodes by brazing, sintering and mechanical fastening. A connector having an Inconel sleeve and a copper core is attached to the cup shaped inert anode by filling the bottom of the inert anode with a

mixture of copper powder and small copper beads, followed by sintering of the mixture to attach the copper core to the inside of the anode. Each connector 16 may include separate components for providing mechanical support and supplying electrical current to the inert anodes. See col. 2, line 66 – col. 3, line 14. A cell is shown that has been retrofitted with inert anode assemblies as set forth above. See col. 3, lines 39-41. D'Astolfo, Jr. et al is as disclosed above and further discloses that inert anodes of cermet materials are prone to thermal shock cracking. Therefore they should be preheated to approximately the operating temperature of the pot before they can be exchanged with a carbon anode. Preheated anode assemblies may be then transported to the cell. See col. 4, line 51—col. 5, line 3.

The prior art of D'Astolfo, Jr. et al does not disclose the brazing be at the open end of the inert anode, the resistive heater or the current density per unit area at normal intensity during use of between 1 and 50 A/cm<sup>2</sup>

The subject matter as a whole would have been within the ability of the person having ordinary skill in the art at the time the instant invention was made because even though the prior art of D'Astolfo, Jr. et al does not disclose the brazing at the open end of the inert anode as set forth in applicants instant claims, D'Astolfo, Jr. et al does show that an anode assembly that has a cup shaped anode (which the examiner construes as being the ladle) having a cavity, an open end, a wall surrounding the cavity, a closed end and a mechanical connection means that may be attached by any suitable means such as brazing, sintering and mechanical fastening. The patent further sets for a connection conductor by means of the connectors 16 that has a mechanical connection

to the anodes 14. Further, the patent discloses that the anodes may be connected to the connector by way of brazing and even shows a joint of between the connector of Inconel and the anode wherein a copper insert is used to mate the Inconel connector to the anode. The mechanical connection by way of the connector 16 closes off the open end of the anode. The conductor 16 is shown in the drawings to be close to the connection end and is shown to have a collar or annular cavity and annular grooves by way of the Inconel, copper of the connector and the anode as seen in the patented figure 3. The insertion of the anode into the connector is considered to be that of a friction or insertion fit, since after it is engaged, the connection may be mechanically connected and brazed. The copper insert is considered by the examiner to be that of the complementary assembly means and is in the shape of a ring. The recitation in the instant claims appears to be obvious since the inert anode assembly is disclosed to be capable of being brazed and used in an electrolytic aluminum production cell and since the brazed joint is one that has copper and uses Inconel, which is a nickel based alloy. Further the inert anodes are taught to be made of a cermet material. The method of manufacturing the anode is also taught since all the features as set forth in the instant method have been found and the patent further discloses the mechanical attachment and the brazing steps, which in order to braze, a heat treatment step must be present. The insertion of the conductor into the anode is considered to be a loose assembly until such time as the operation has achieved a high enough temperature to make the proper mechanical and brazed connection together and therefore meets the "loose assembly" criteria in the instant claim. Since the patent discloses an Inconel (nickel) being used

along with copper, it appears that when the brazing occurs, that the heat causes the nickel and copper to be incorporated into each other which would modify the two materials and therefore the heat causes the two materials to be modified and a joint is formed. The diffusion of the nickel into the copper and copper into the nickel is considered to be the brazing process. Further, the prior art of Secrist disclose that it is known in the art to use a brazing material to make the connection between the conductor and the anode wherein the brazed material has a low resistance and continues to the top surface of the inert anode, making the electrical connection with the conductor. Therefore, one having ordinary skill in the art would be motivated to use such a brazing to connect the anode and conductor together in order to make a better electrical connection and reduce any outside interferences with such a connection and to continue the brazing joint from the bottom of the hole inside the inert anode up to the top of the opening in the inert anode to which the conductor is inserted, so as to make the joint more rugged and secure. One having ordinary skill in the art would also have the ability to use such heater to heat the anode since the prior art of D'Astolfo, Jr. et al sets forth that it is known in the art to heat the inert anodes to stop the cermet material from cracking. Further, the prior art of D'Astolfo, Jr. et al shows the anode being enclosed in the connector and therefore it appears that the current density per unit area at the nominal intensity during use would be between 1 and 50 A/cm<sup>2</sup>, since the same materials for the anode and connector are used in the prior art as are used in applicants' instant invention. Therefore, the prior art of D'Astolfo, Jr. et al renders the applicants' instant invention as obvious for the reasons set forth above.

***Allowable Subject Matter***

1. Claims 58-62, 65, 66, 69 and 72 are allowable over the prior art of record.
2. Claims 58-62, 65, 66, 69 and 72 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
3. The following is a statement of reasons for the indication of allowable subject matter: The prior art of record fails to teach and/or suggest the brazing material to be modified using evaporation, chemical reaction, exchange by diffusion or exchanged by oxidation-reduction and further the prior art does not disclose use zinc or magnesium as the constituent elements. The prior art, additionally does not include a reservoir for flow of the brazing material into the reservoir before heat treatment and does not show that the anode is inclined to prevent flow of the brazing material into the cavity.

***Response to Arguments***

Applicants arguments with respect to claims 1, 2, 4-9 and 18 having been rejected under 35 U.S.C. 112, second paragraph have been dropped in view of applicants cancellation of these claims and the submission of newly presented claims to correct the deficiencies.

Applicants arguments with respect to claims 1, 2, 4-16, 18, 19, 20, 26, 29, 30, 32, 33, 36 and 37 as having been rejected under 35 U.S.C. 102(b) as anticipated by D'Astolfo, Jr. et al and further claims 3 and 17 having been rejected under 35 U.S.C. 103 as obvious over D'Astolfo, Jr. et have been dropped in view of applicants cancellation of these claims and submission of newly presented claims.

A new rejection is shown above with respect to the newly submitted claims using D'Astolfo, Jr. et al in combination with Secrist et al, addressing the brazing of the inert anode to the conductor.

Applicants arguments appear to be with respect to the brazing, with the applicant explaining that the gap is too wide in the D'Astolfo, Jr. et al inert anode to conductor connection. Even though D'Astolfo, Jr. et al sets forth that brazing can occur applicants are arguing that the gap is too large for proper brazing to occur. To cure this deficiency, the examiner relies on Secrist which shows that it is know in the art to use brazing from the bottom of the inert anodes cavity to the top surface of the anode cavity that has the conductor inserted therein. As can be seen in the figure of Secrist, the gap is small and that the brazing material used is one that has low resistance which would be beneficial to the electrical connection involved. Therefore, it appears that such a connection would be within the ability of the person having ordinary skill in the art and that such a connection would be beneficial in the device of D'Astolfo, Jr. et al to ensure a better and more electrically efficient connection of the inert anode to such a conductor rod. Therefore, the prior art of D'Astolfo, Jr. et al in combination with Secrist et al renders the applicants instant invention as obvious for the reasons set forth.

#### ***Conclusion***

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).



A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bruce F. Bell whose telephone number is 571-272-1296. The examiner can normally be reached on Monday-Friday 6:30 AM - 3:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

BFB  
September 14, 2008

/Bruce F. Bell/  
Primary Examiner, Art Unit 1795